body from hindrance brought about by the active oxygen species.

However, since administering a metal porphyrin complex independently to a living body has many problems from the viewpoint of safety and effects, no metalloporphyrin complexes have been used as a drug.

The present invention has been completed in view of these problems and has an object of providing a means for safely administering a metalloporphyrin complex to a living body and causing the SOD activity possessed by metalloporphyrin complex to be effectively exhibited.

A further object of the present invention is to provide an anticancer agent that can replace anticancer agents such as clinically used cisplatin and mitomycin C causing serious side effects by selectively exhibiting an effect on cancer cells and also to provide an antioxidant for treating diseases other than cancer such as inflammation, nervous system diseases, arteriosclerosis, and diabetes in which active oxygen species are considered to be involved.

DISCLOSURE OF THE INVENTION

As a result of extensive studies in order to develop a method for decreasing the concentration of $O_2^{-\cdot}$ radicals in cancer cells using the SOD activity of metalloporphyrin complexes, the present inventors have found that the metalloporphyrin complexes can be safely administered while maintaining superior SOD activity and can be retained in the blood by being embedded in a niosome. This finding has led to completion of the present invention.

Specifically, the present invention provides a niosome having a metalloporphyrin complex embedded therein comprising a cationized metalloporphyrin complex which forms an ion complex with an anionic surfactant and a niosome-forming substance.

The present invention further provides a process for producing a metalloporphyrin complex-embedding niosome comprising reacting a cationized metalloporphyrin complex and an anionic surfactant to produce an ion complex, mixing the resulting ion complex with a niosome-forming substance, and treating the mixture with supersonic waves in a medium.

The present invention also provides a drug comprising the metalloporphyrin complex-embedding niosome as an effective component.

BRIEF DESCRIPTION OF THE DRAWING

Figure 1 shows results of tests for confirming an anticancerous effect using FeT2MPyP as a metalloporphyrin complex and Pluronic F-88 as a niosome-forming substance, wherein the solid line connecting black triangle marks indicates the result of ion complex 2 (FeT2MPyP/4SAS), the dotted line connecting black square marks indicates the result of Pluronic F-88, solid line connecting black square marks indicates the result of CDDP, the solid line connecting black diamond marks indicates the result of MMC, and the solid line connecting black circle marks indicates the result of the invention product 9.

BEST MODE FOR CARRYING OUT THE INVENTION

In the present invention, "metalloporphyrin complex-embedding niosome" indicates a niosome in which a metalloporphyrin complex is incorporated, formed by a niosome-forming substance such as a mixture of a nonionic surfactant, a cholesterol, and the like, in which either a part of the metalloporphyrin complex may be present outside the niosome membrane or the entire amount of the metalloporphyrin complex is embedded in the niosome membrane.